

**ABSTRACT OF THE DISCLOSURE**

The invention relates to a method for automatic dynamic gain control in optical Raman amplifiers and an optical Raman amplifier adapted for the same. The present invention has found that in multiple pump Raman amplifiers a substantially linear relationship exists between total amplified signal power and pump power for each of different wavelength pumps, in order to maintain an original gain profile and gain levels for an optical link with a fully loaded channel configuration, in response to dropped channels. In accordance with the method, and an amplifier programmed to practice the method, a set of pump power values and signal level values required to maintain the characterized gain profile and gain levels for a plurality of channel loading configurations are pre-established for the each pump wavelength. A linear function from each set of pre-established values is derived for each pump wavelength. Advantageously, a single photodiode can replace a costly and complex channel monitor for providing signal responsive pump control.